

RUST REMOVAL

MADE EASY

A TOOL COLLECTOR SHARES HIS LABOR OF LOVE

As a professor of archaeology, and an active tool collector, Missourian Jim Price sometimes manages to apply academic skills to his hobby—like removing rust with electrolysis. “For decades, archaeologists have employed the method to clean specimens without damage,” says Jim. (Read more about Jim Price in “He Makes Tools Sing Again” on pages 25–29.)

Charging up for rust

According to Jim, his rust-removal technique depends on producing a chemical change (removing rust) by passing an electric current through a non-metallic conductor. To translate that into application, you’ll need a common battery charger (about \$20 at auto-supply stores) to supply the direct current. Then—for the conductor—mix a can of lye (about \$2 for 12 oz. at grocery stores) to three gallons of cold water.

For the terminals—the negative cathode and the positive anode—of the electrolytic cell you’re creating, use ferrous (derived from iron) metal rods, such as concrete-reinforcing rod. The container must be made of plastic or glass. Gather up some flexible iron wire, a scrap board long enough to rest on the container, and you’re ready to start.

Zap away corrosion

Jim recommends operating your rust remover outdoors. “Not because the fumes are toxic,” he says, “but because they really smell bad.” And be sure that the tool(s) you’re going to clean do not have a zinc plating or brass parts. Zinc will dissipate through

the solution and cover everything, and brass gets discolored. Also, remove wooden parts.

To support the metal terminals in the bucket, drill two holes in the board the same diameter as the terminals, one near each end. Then insert the terminals.

With a wrap of wire, attach the rusted tool or parts of a tool to the bottom of the terminal you designate as negative. Next, place the terminals and attachments into the bucket containing the lye/water mixture.

Start the process by connecting the negative (black) lead of the battery charger to the negative terminal and the positive (red) lead to the opposite one. Set the charger to low-amp charge (2 amp or “trickle” on a 12-volt instrument). Next, plug the charger cord into an outlet.

“When the solution bubbles like a Coke in a glass, it’s working properly,” Jim advises. “If it doesn’t bubble, there’s a bad connection.”

Jim has found that the de-rusting process takes about 35 minutes. “When all the rust has turned to what looks

like a black powder, it’s done,” he notes.

After stopping the electric flow and removing the charger leads, Jim pulls the still-attached tool from the solution and rinses it quickly with a garden hose (gloves keep the weak but caustic solution off his hands). “Then, rinse it real good with boiling water,” he says. “You also can wire-brush the metal very lightly. If there are any stains left on the metal where the rust was, remove them with a buffing wheel and jewelers rouge. Then, rub with oil.”

Illustration: Brian Jensen

